PRC Environmental Management, Inc.

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Planning Research Corporation

PRELIMINARY ASSESSMENT/ VISUAL SITE INSPECTION

MICHIGAN CHROME AND CHEMICAL COMPANY DETROIT, MICHIGAN

FINAL REPORT

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Waste Programs Enforcement
Washington, D.C. 20460

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1.0 INTRODUCTION

PRC Environmental Management, Inc. (PRC) received Work Assignment No. C05087 from the U.S. Environmental Protection Agency (U.S. EPA), under Contract No. 69-W9-0006 (TES 9), to conduct preliminary assessments (PA) and visual site inspections (VSI) of hazardous waste treatment and storage facilities in EPA Region 5.

As part of Region 5's Environmental Priorities Initiative, the RCRA and CERCLA programs are working together to identify and address RCRA facilities that are a high priority for corrective action using available CERCLA and RCRA authorities. The PA/VSI is the first step in the process for prioritizing facilities for corrective action. Through the PA/VSI process, sufficient information is obtained to characterize a facility's actual or potential releases to the environment from solid waste management units (SWMU). The purpose of the PA is to:

- Identify SWMUs and areas of concern (AOC) at the facility.
- Obtain information on the operational history of the facility.
- Obtain information on releases from any units at the facility.
- Identify data gaps and other informational needs to be filled during the VSI.

The PA includes a review of all documents and files located at state offices and at the U.S. EPA Region 5) office in Chicago.

The purpose of the VSI is to:

- Identify SWMUs and AOCs not found during the PA.
- Identify releases not discovered during the PA.
- Provide a more specific description of the environmental setting.
- Provide more information on release pathways and the potential of releases to each media.
- Confirm operational SWMU, AOC, and release information obtained during the PA.

The VSI includes interviewing appropriate facility staff, inspecting the entire facility to identify all SWMUs and AOCs, photographing all SWMUs, identifying evidence of releases,

initially identifying potential sampling locations, and obtaining all information necessary to complete the VSI report.

This report documents the results of a PA/VSI of the Michigan Chrome and Chemical Company in Detroit, Michigan (EPA ID Number MID 005 378 161).

The PA was completed July 6, 1990 and included information from the Michigan Department of Natural Resources (MDNR) files and U.S. EPA Region 5 RCRA files. The VSI was conducted on July 26, 1990. The VSI included interviews with Richard Cichon, Plating Division Manager, and Bob Emmons, Coating Division Manager, and a walkthrough inspection of the Michigan Chrome and Chemical Company facility. Six SWMUs and three AOCs were identified. The VSI is summarized in Attachments B and C.

2.0 FACILITY DESCRIPTION

This section describes the facility location, past and present operations, processes that generate waste, waste streams, waste management practices, release history, regulatory history, the environmental setting, and receptors.

2.1 FACILITY LOCATION

The Michigan Chrome and Chemical Company (MCCC) is an electrochemical plating and coating facility located at 8615-35 Grinnell Avenue in Detroit, Michigan. The site is just south of the Detroit City Airport; the surrounding area is predominantly industrial. Residences are located south and west of the facility. The area is fully developed (residentially and commercially) for many miles in all directions (Figure 1).

2.2 FACILITY OPERATIONS

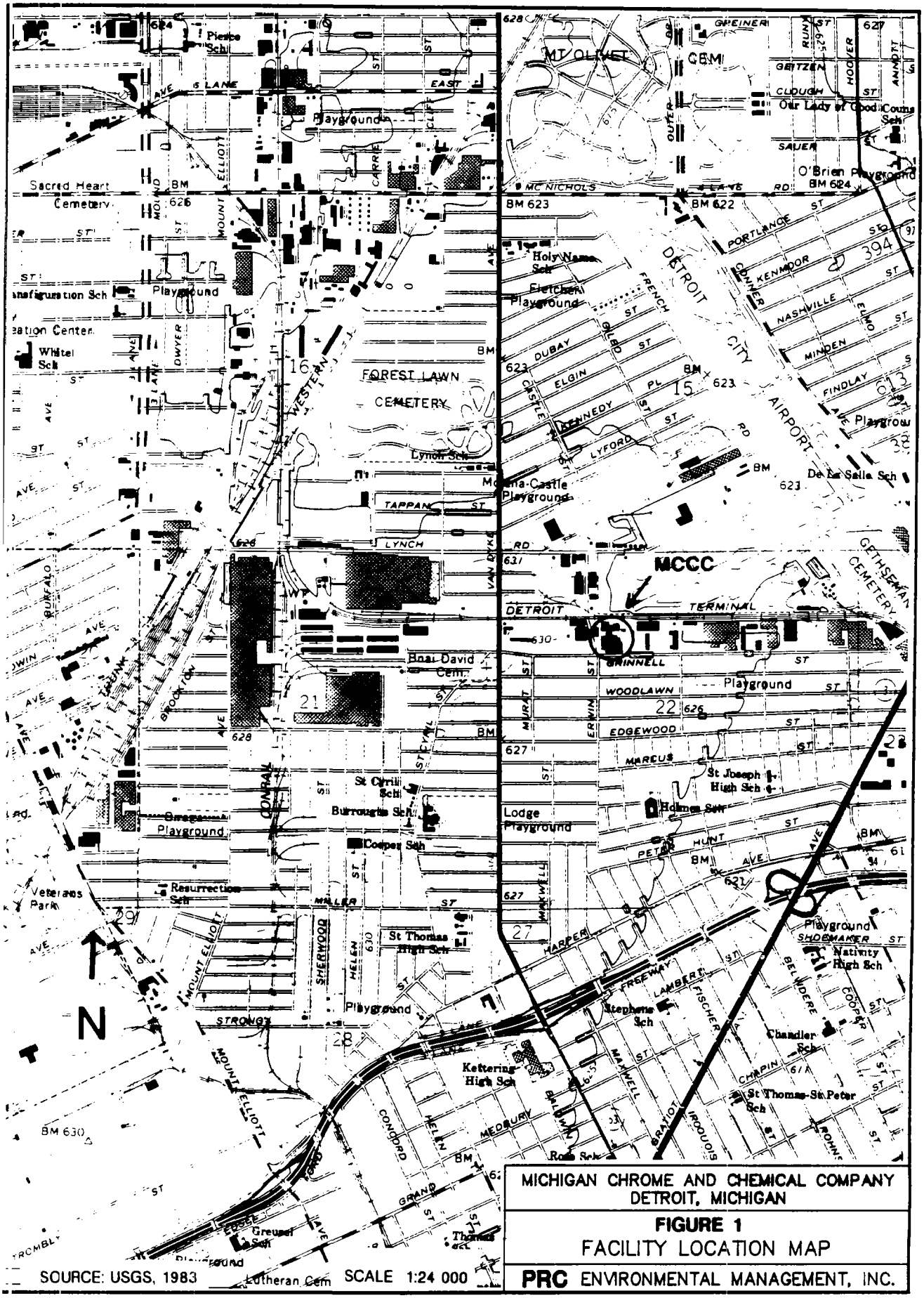
The main MCCC plant consists of two connected buildings with approximately 50,000 square feet of floor space used jointly for office and operations. Approximately 125 people are employed at the facility. Except for technical improvements, plating operations have not changed since they began in the early 1950's. MCCC is privately held by the original owners.

Three chemical and waste storage buildings (Erwin Building, North Butler Hut, and South Butler Hut) are adjacent to the main building (Figure 2). A 20 cubic yard roll off box located in the southwest corner of the site was used to temporarily store metal hydroxide sludge. This unit was removed in February 1990. No further actions were taken when the roll off box was removed (Cichon, 1990c). The metal hydroxide sludge is presently stored in the Erwin Building.

Operations at MCCC fall within one of three divisions: plating, coating, or chemical (MDNR, 1982). The aerospace and automotive industries comprise the majority of MCCC's business.

Historically, the chemical division manufactured plastic and powder coatings. However, this division was shut down in October 1989 and sold in January 1990. The present chemical division manufactures powder coatings for MCCC use only; coatings are no longer commercially sold. Space formerly occupied by the chemical division is either used for storage or empty.

The plating division is the center of MCCC's manufacturing operations. There are six major electrochemical metal plating lines operating 24 hours a day: nickel-cadmium, chrome,



MICHIGAN CHROME AND CHEMICAL COMPANY
DETROIT, MICHIGAN

FIGURE 1
FACILITY LOCATION MAP

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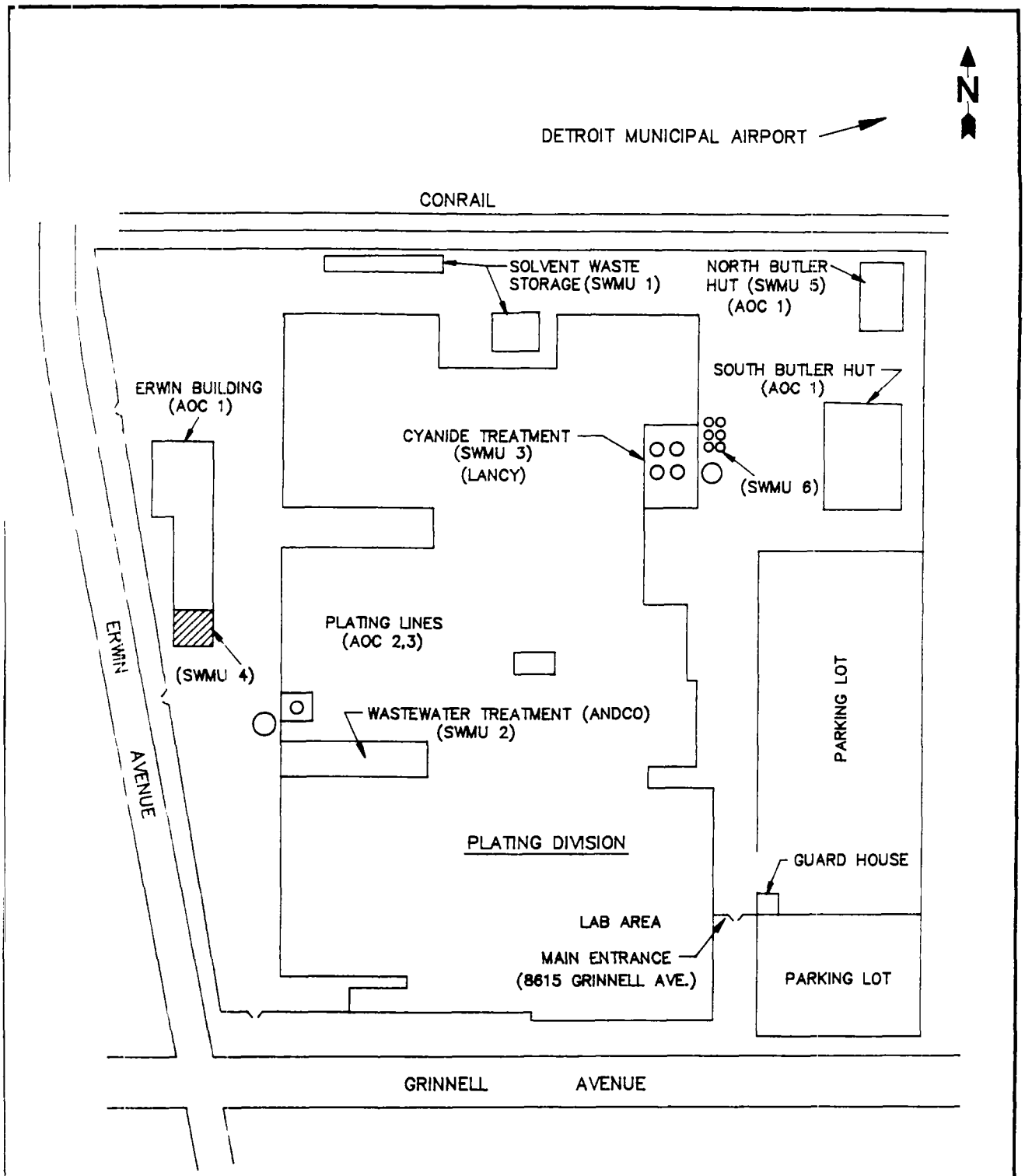


MICHIGAN CHROME and CHEMICAL COMPANY
DETROIT, MICHIGAN

FIGURE 2
FACILITY LAYOUT

PRC ENVIRONMENTAL MANAGEMENT, INC.

SOURCE: ADAPTED FROM MCCC, 1988a

copper cyanide, silver, bronze, and electroless nickel. Other plating procedures involving gold, tin, lead-tin and various alloys are performed as required. In addition, there is a nitric/hydrofluoric acid passivating line used for etching metal parts prior to coating.

The coating division is located in a separate building a short distance away at 8825 Grinnell Avenue. The last wet coating operation was a polyvinyl chloride (PVC) coating line; this was shut down in October 1989. The current powder coating operation includes a five-stage cleaning unit, electrostatic powder spray booths, and an oven for curing the powder coating.

This PA/VSI identified 6 SWMUs and 3 AOCs; the SWMUs are listed in Table 1. The location of the SWMUs and AOCs are shown on Figure 2.

2.3 WASTE GENERATING PROCESSES

The primary waste streams generated at MCCC are waste solvents, oils, wax, plating wastewaters, and metal hydroxide sludge. Table 2 lists the solid wastes currently generated at MCCC.

Organic solvent waste from the chemical division was stored in 55-gallon drums on concrete pads located near the north side of the facility since the early 1950's (Figure 2). Chemicals stored here prior to off-site disposal included toluene, methyl ethyl ketone, sludge (20% toluene), solvent-soaked rags, methylene chloride, and trichloroethylene. In March 1990, all drums and their contents were permanently removed from this location in accordance with an approved closure plan (MDNR, 1989). However, final closure is pending MDNR's approval of the proposed soil survey for the area.

Currently, most of the organic waste generated by MCCC is methyl ethyl ketone (MEK) from degreasing operations. Spent MEK is stored in 55-gallon drums in the North Butler Hut. Additional organic waste consists of used oil, wax, and permathane. Permathane is a trade name for a degreasing mixture that is 95 percent 1,1,1-trichloroethane (TCA), 2 percent sec-butanol, and trace amounts of glycols and ethers. Permathane is manufactured by Detrex Gold Shield. Oil and wax are used to protect the plating on parts during packing and subsequent operations. Waste oil, wax, and permathane are stored in drums outside along the east wall of the facility across from the South Butler Hut (Figure 2). The waste MEK and TCA are classified as F001 and F005 hazardous waste, respectively. According to MCCC, these materials are not stored for more than 90 days before being disposed of off-site.

TABLE 1

SOLID WASTE MANAGEMENT UNITS
MICHIGAN CHROME AND CHEMICAL COMPANY
DETROIT, MICHIGAN

SWMU Number	SWMU Name	RCRA Hazardous Waste Management Unit*	Status
1	Solvent Waste Storage	Y	Undergoing RCRA closure; wastes were removed.
2	Acid/Wastewater Treatment Plant	Y	Active
3	Cyanide Treatment Facility	Y	Active
4	Metal Hydroxide Sludge Storage	N	Active; less than 90-day storage of hazardous waste.
5	Waste Degreaser Storage Area	N	Active; less than 90-day storage of hazardous waste.
6	Drum Storage Area	N	Active; less than 90-day storage of hazardous waste.

* A RCRA hazardous waste management unit is one that currently requires a permit.

TABLE 2

SOLID WASTES
MICHIGAN CHROME AND CHEMICAL COMPANY
DETROIT, MICHIGAN

Waste Name	Source	Primary Management Unit[1]
Plating rinse waters (F009)	Electrochemical plating lines	2
Cyanide bath water (F007)	Electrochemical plating lines	3
Metal hydroxide sludges (F006)	Acid/alkali wastewater and plating bath treatment units	2, 3
Incinerated sludge ash (F006)	On-site incinerator	4
Methyl ethyl ketone (F005)	Degreasing operations	5
Permathane[2] (F003)	Degreasing operations	6
Waste oil, wax	Facility operations	6
Waste powder coating	Electrostatic spray booth	NA

Note:

1 Primary management unit refers to the SWMU that currently manages the waste; past practices were sometimes different.

2 Permathane is a trade name for a degreasing mixture that is 95 percent 1,1,1-TCA, 2 percent sec-butanol, and trace amounts of glycols and ethers.

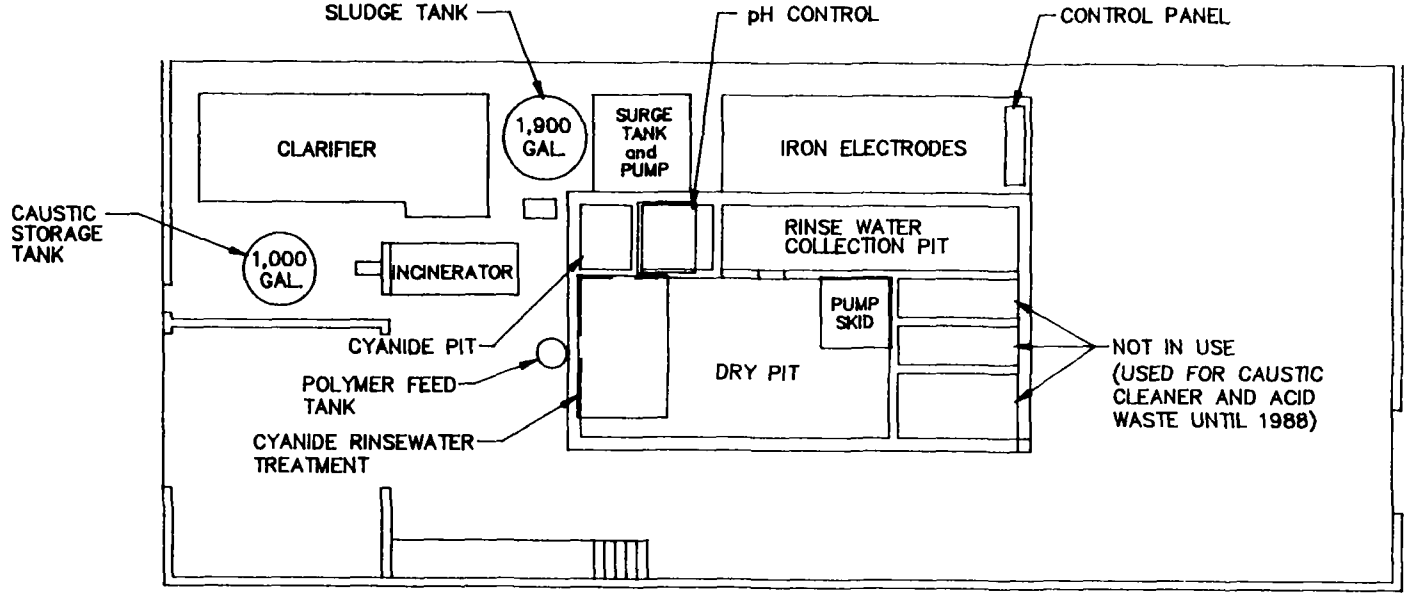
Acid waste and plating bath rinse waters from the plating division are treated by an ANDCO water treatment system (ANDCO Environmental Processes, Inc., Amherst, NY; Figure 3). The unit treats approximately 180,000 gallons per day on a continuous basis. Rinse water from metal cyanide baths is treated with sodium hypochlorite at pH 11.5 to destroy the cyanide before the water is added to the main acid/alkali pit. The acid/alkali pit is the receiving and holding unit for all acid and alkali wastewater from the plating division.

The ANDCO unit uses an electrochemical process to remove heavy metals in the form of hydroxides. The metal hydroxides precipitate out of solution to form a sludge (F006 hazardous waste). The skimmed off sludge is dewatered in a filter press, and incinerated on-site at approximately 1,000°F. Particulate emissions from the small sludge incinerator are collected by a cyclone. According to MCCC, no permit is required for the sludge incinerator (Cichon, 1990c). Material collected by the cyclone is combined with the sludge ash. The residual material is stored in plastic (polypropylene) bags in the metal hydroxide sludge storage area (SWMU 4) in the Erwin building. Each bag holds three to four drums of solid material. The sludge is primarily iron, nickel, and tin hydroxides. MCCC contracts World Resources Conservation (WRC) to remove and dispose of the sludge ash.

The wastewater treated by the ANDCO unit is discharged to a sanitary sewer. This discharge is monitored daily by MCCC and quarterly by the City of Detroit.

Spent metal-cyanide plating bath solutions are treated by a LANCY waste treatment unit (shown in Figure 4, designed by ECR, Opal, PA; SWMU 3). Waste cyanide from the plating lines is pumped into a 200-250 gallon tank, which is transported by forklift to the cyanide treatment area. The bath solution is then pumped directly into the 2,000-gallon treatment tank, or into one of two holding tanks. Treatment is performed on a batch basis; typically 2,000 gallons per week.

The LANCY treatment unit uses alkali chlorination to convert cyanide to carbon dioxide and nitrogen. The processed fluid is neutralized and transferred to a holding tank, where sludge settles to the bottom. The overlying liquid is decanted to a sanitary sewer. The sludge is composed of heavy metal hydroxides; primarily copper, tin and nickel. The sludge is pumped to a nearby filter press for dewatering and is stored with the ANDCO incinerated sludge in plastic bags located in the Erwin building. During the late 1970s and early 1980s, alkali and cyanide waste were occasionally stored in an underground tank located front of the LANCY treatment area. This tank was removed in December 1989. MDNR was not involved in the tank removal and no soil sampling was conducted.



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7.5' 0 7.5' 15'

SCALE: 1" = 15'

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SOURCE: ADAPTED FROM MCCC, 1990b

MICHIGAN CHROME and CHEMICAL COMPANY
DETROIT, MICHIGAN

FIGURE 3

ANDCO WASTEWATER TREATMENT UNIT

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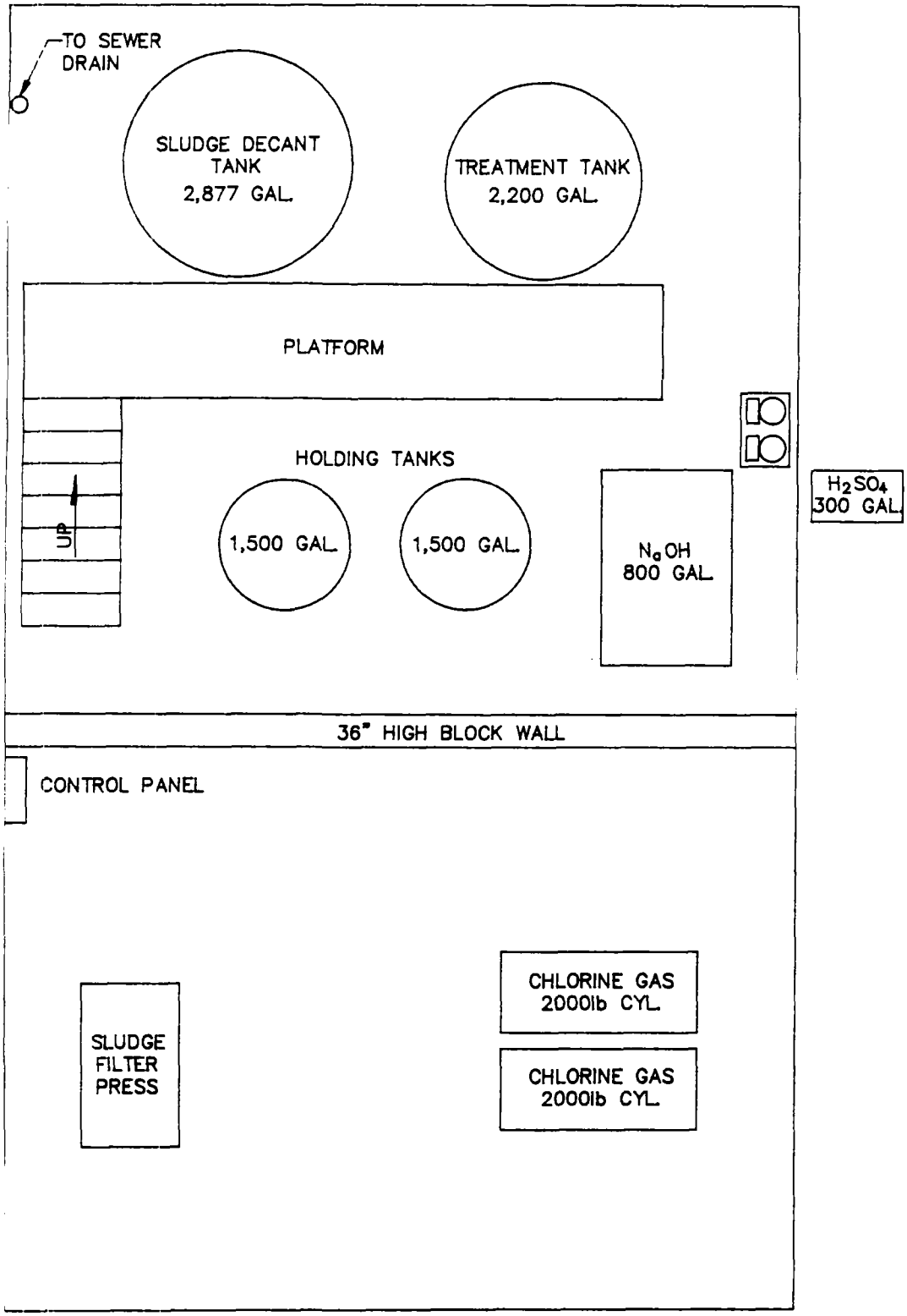

MICHIGAN CHROME and CHEMICAL COMPANY
DETROIT, MICHIGAN

FIGURE 4

LANCY CYANIDE WASTE TREATMENT UNIT

PRC ENVIRONMENTAL MANAGEMENT, INC.

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SOURCE: ADAPTED FROM MCCC, 1990b

Waste from the coating division is primarily polyester or epoxy powder coating originating from the electrostatic spray booths. The powder coatings are applied to the metal parts with a spray gun in a ventilated booth. Much of the powder does not adhere to the part, falls to the floor of the booth, and is collected by a series of cyclones. The powder can be recycled once through the spray gun. Waste powder is bagged and disposed of along with MCCC's municipal trash. The powders are not hazardous.

2.4 RELEASE HISTORY

There were no reported chemical releases to the environment in the documents available for this review. However, there was some evidence of releases within the plant during the VSI. At the time of the VSI, MCCC was in the process of upgrading one of the plating lines. Small clumps of yellow solid material, presumably a chromium compound, were observed along the boundary of this construction area. In addition, it appeared that the work was being performed directly on surface soils, i.e., MCCC had broken through the floor of the building. Although there was no evidence that the chromium compound had strayed into the soil, spills in this area could result in soil contamination. Based on observations from a distance of at least 20 feet, a rough estimate of the amount of yellow material is 5 cubic yards. However, since the physical nature of the material could not be ascertained, the volume estimate is likely an order-of-magnitude estimate.

No significant cracks in the floor were observed during the VSI; however, catwalks throughout the plating area were noticeably stained, and ventilation for the plating baths, lead anode shop, and spray paint booths was either in poor condition or inoperative. The overall management of the plating division, judging from an environmental standpoint, suggests the possibility of past, non-documented releases.

2.5 REGULATORY HISTORY

The documentation available from MDNR for this review provides an interrupted history of MCCC's compliance with environmental regulations. In 1982, the U.S. EPA approved MCCC's Part A permit application for interim status, which was filed on November 18, 1980 (MDNR, 1988a). There is no reference to a Part B permit application in the files available for review.

MCCC received notification of RCRA violations in October 1982, following a site inspection by MDNR. All of the violations involved record keeping regulations and written contingency and closure plans (MDNR, 1982). A contingency plan dated September 9, 1983 is in

the MCCC file; however, it is not clear to whom this was sent, and whether it was found acceptable by MDNR or EPA.

The MCCC facility was inspected again in October 1987 and MCCC was notified of deficiencies according to RCRA and Michigan Act 64 and 136 requirements (MDNR, 1987). In addition to record keeping citations similar to those in 1982, violations were found in waste storage practice. MCCC responded with updated written programs, as well as a plan for a secondary containment system around the liquid hazardous waste storage area (SWMU 1; MCCC, 1988a).

In May 1988, MDNR informed MCCC that in order to comply with RCRA and Michigan Act 64, MCCC had two options: (1) submit an Act 64 operating license application and the Hazardous and Solid Waste Amendment portion of the RCRA permit application; or (2) submit a storage facility closure plan (MDNR, 1988b). MCCC responded with a preliminary closure plan on September 16, 1988 (MCCC, 1988b). During this time, MCCC failed to implement plans for secondary containment around the liquid hazardous waste storage area. A MDNR interoffice communication documents three letters of warning issued to MCCC about its failure to comply with the liquid containment regulation (MDNR, 1988c). MDNR conducted another site inspection in December, 1988 (MDNR, 1988d) and found that MCCC was still not in compliance with the liquid waste containment requirement cited in the 1987 inspection.

MCCC's closure plan for the liquid hazardous waste storage area (SWMU 1) was conditionally accepted on May 30, 1989, following several revisions (MDNR, 1989). All drums were removed from the storage area in March 1990 by Petrochem (MCCC, 1990a). Final closure is pending MDNR approval of MCCC's proposed soil survey.

MCCC discharges treated water from the ANDCO wastewater treatment unit to the sanitary sewer under City of Detroit type II permit, number 023-012. The plating manager is not aware of any air permits or NPDES permits currently held by MCCC (Cichon, 1990b).

2.6 ENVIRONMENTAL SETTING

This section details the climate, floodplains and surface water, geology and soils, and ground water, in the vicinity of the MCCC facility.

2.6.1 Climate

The climate of the Detroit metropolitan area is strongly influenced by Lake St. Clair. The average temperature is 48.5 °F. The average daily minimum temperature is 16.1 °F in January, and the average daily maximum temperature is 83.1 °F in July. The average annual precipitation is 32.2 inches. The 1-year 24-hour rainfall value is 2.52 inches. The prevailing wind is from the southwest, with an average windspeed of 10.3 miles per hour (NOAA, 1989). This air release pathway would primarily affect the area bordering the north runway of the Detroit City Airport.

2.6.2 Floodplains and Surface Water

The nearest surface water to the MCCC facility is the Detroit River approximately 4 miles away. There is no discernable pathway to the Detroit River and rain water runoff from the facility flows to the city sewer system. The site is not located within a 100-year or 500-year floodplain (Levine, 1990). Wayne County receives the majority of its water from surface supplies, primarily the Detroit and Huron rivers, and Lake St. Clair.

2.6.3 Geology and Soils

The general geology of Wayne County consists of Devonian age shales, limestones, dolomites of the Traverse Formation overlain by Pleistocene glacial deposits. The glacial deposits in and around the vicinity of the MCCC facility are part of the ancient glacial lake plain of southeastern Michigan (Mozola, 1969). This ancient lake plain is a large feature extending from the City of Ypsilanti east to Lake Erie. Characteristically, the ancient glacial lake plain is gently sloping and consists of relatively fine grained cohesive soils. The surface gradient of the plain is approximately 10 feet per mile.

The Detroit metropolitan area is situated primarily on lacustrine deposits (ancient lake beds). These deposits are typically composed of clay and silt and may be several tens of feet thick. The soil is characterized by grey to reddish brown silt with localized areas of lacustrine sand and clay till. Lacustrine sediments have low permeability and porosity and do not yield large quantities of water (WMU, 1981).

2.6.4 Ground Water

There are approximately 600 ground-water wells distributed throughout Wayne County (WMU, 1981). Most of these wells access bedrock at depths ranging from 102 to 183 feet and

draw water from the Devonian Aquifer System. Four formations comprise the Devonian Aquifer System: the Traverse Group, Dundee Limestone, Detroit River Group, Sylvania Sandstone.

Specific information regarding the aquifer structure directly underlying the MCCC facility is not available. However, confined and unconfined aquifers may be found at various depths up to 158 feet throughout Wayne County. These aquifers are commonly found as coarse sand and gravel and fine sand lenses interbedded in the predominant lacustrine silty clay till (Mozola, 1969). There is no evidence indicating an impact on local ground water from operations at MCCC.

2.7 RECEPTORS

The MCCC facility is bordered on the north by the Detroit City Airport. The MCCC facility is located in an urban environment. There are no sensitive environments or endangered species in the vicinity of the facility. A small number of residences are located west and south of MCCC, and to the north on the far side of the airport. An estimated 2,000 people live within a mile of the MCCC facility. Several schools and playgrounds are located within a mile of the MCCC facility. Drinking water for the area is supplied by the City of Detroit Water and Sewer Department.

The entire MCCC facility is secured by a 10-foot tall, electrically monitored fence with barbed wire. All entrances are locked and/or guarded 24 hours a day. Visitors to the facility are checked by a security guard.

3.0 SOLID WASTE MANAGEMENT UNITS

This section describes in detail the SWMUs that were identified during the PA/VSI process. The following information is presented for each SWMU: a description of the unit, dates of operation, wastes managed, release controls, history of release, and observations.

SWMU 1 **Solvent Waste Storage**

Unit Description: This unit is actually three separated storage areas (20 by 50 feet, 30 by 40 feet, and 5 by 20 feet) located outside on the north side of the main building (Figure 2). Waste was stored in 55-gallon drums on concrete or asphalt.

Date of Start-up: Solvent waste was stored in this area since the early 1950's.

Date of Closure: A closure plan for this unit was accepted by MDNR in 1989. All of the drums in this area were removed in March 1990. Final closure is pending approval of MCCC's proposed soil survey. The proposal contains non-standard analysis methods that MDNR is evaluating.

Wastes Managed: Toluene, MEK, sludge (20% toluene), solvent-soaked rags, methylene chloride, and TCE were all managed by this unit.

Release Controls: There were no release controls beyond the concrete pad on which the drums were stored; the area was not roofed and there were no visible berms or other containment devices. The concrete pad was constructed in the early 1950s. No waste was stored in the area prior to that time.

History of Release: No releases were noted in the documents available for this review, or during the VSI.

Observations: The area was generally clean and free from debris. No drums were observed in this area. The concrete pad was in good condition.

SWMU 2 **Acid/Wastewater Treatment Plant**

Unit Description: This unit, referred to as the ANDCO treatment system, is located in the middle of the western side of the plating division. Acid wastes and rinse water from cyanide and other chemical rinses are treated here. The unit treats approximately 180,000 gallons per day on a continuous basis. The unit is comprised of several compartments: a cyanide treatment pit; pH control; rinse water collection pit; and a dry pit for emergency situations (19,000 gallons) (Figure 3). Cyanide rinse water is treated with sodium hypochlorite at pH 11.5 before it is introduced to the acid/alkali pit. The solution is pumped through three electrochemical cells that use iron electrodes to reduce metals in the water to metal hydroxides. Following pH adjustment with sodium hydroxide or sulfuric acid, polymers are added to the waste stream as it leaves the cells to promote flocculation. The sludge floats to the top of a clarifying unit, where it is skimmed off, filter pressed, and incinerated (950-1000°F). The hot dry powdery ash exiting the incinerator is allowed to cool in 55-gallon drums before it is stored in plastic bags in the Erwin building. The sludge production rate is approximately 10 cubic yards per week. The sludge is primarily iron, nickel, and tin hydroxides (F006 waste). Particulate emissions from the incinerator are collected with a cyclone. The solid material captured by the cyclone is combined with sludge ash from the incinerator.

Date of Start-up: This unit was placed in operation in 1985.

Date of Closure: The unit is currently active.

Wastes Managed: Acid and alkali wastewater and cyanide rinse water (F009) from plating operations are treated by this unit.

Release Controls: The ANDCO treatment unit has a 19,000-gallon release containment pit, and the area is bermed. The treatment pits are concrete lined with an acid-resistant rubber coating. The pits are below ground and covered with a metal grating; the area is enclosed by a 6 inch concrete berm. Discharges from this unit are monitored daily by MCCC and quarterly by the City of Detroit (City of Detroit Type II Permit No. 023-012). Emissions from the incinerator are collected by a cyclone.

History of Release: No releases were noted in the documents available for this review or during the VSI.

Observations: The unit was observed in operation without incident. The pits were full of wastewater.

SWMU 3 **Cyanide Treatment Facility**

Unit Description: This facility is located in a 24-foot by 40-foot room in the eastern portion of the chemical division building (Figure 4). A LANCY unit is used to destroy waste cyanide from the plating lines by alkali-chlorination. In the alkali-chlorination reaction, cyanide is oxidized to carbon dioxide and nitrogen. Spent plating bath solution is pumped into a 200-250 gallon tank, which is transported by forklift to the cyanide treatment area. The bath solution is then pumped directly into the 2,000-gallon treatment tank, or into one of two holding tanks. Treatment is performed on a batch basis; typically 2,000 gallons/week is treated. Following cyanide destruction, the waste is neutralized and pumped into a sludge settling tank. The liquid is decanted and discharged to a sanitary sewer. The sludge is pumped to a nearby filter press for dewatering, then stored in bags in the Erwin building. This sludge is collected by WRC for off-site treatment, metal recovery, and disposal. Ancillary equipment for the LANCY unit includes two 1-ton chlorine cylinders, an 800-gallon tank that holds 51 percent NaOH solution, and a 300-gallon sulfuric acid tank.

Date of Start-up: The unit began operating in 1979.

Date of Closure: This unit is currently active.

Wastes Managed: The LANCY unit is used to treat metal-cyanide bath solutions (F007) from the electrochemical plating lines.

Release Controls: The LANCY treatment, settling, and holding tanks are separated from the rest of the room by a 3-foot-high block wall (berm). Unit controls are monitored with an alarm system. The sulfuric acid tank is not bermed. The chlorine tanks appeared securely anchored to the floor. Weekly discharge is monitored.

History of Release: No releases were noted in the documents available for this review, or during the VSI.

Observations: The NaOH tank is located in the same section as the LANCY tanks and appeared very corroded during the VSI.

SWMU 4 **Metal Hydroxide Sludge Storage**

Unit Description: Dry metal hydroxide sludge ash from the cyanide and the acid/wastewater treatment units (LANCY and ANDCO, respectively) are stored in polypropylene plastic bags. Each bag contains the equivalent of three to four 55-gallon drums of sludge ash. These bags are stored on wooden pallets in the Erwin building for pickup by WRC for off-site disposal. Four bags were observed in the storage area during the VSI.

Date of Start-up: This unit began operating in 1987.

Date of Closure: This unit is currently active.

Wastes Managed: This unit stores metal hydroxide sludges from the LANCY and ANDCO treatment units.

Release Controls: The storage bags are located in an enclosed building with a concrete floor. When full, the bags are closed. The area is not bermed.

History of Release: No releases were noted in the documents available for this review or during the VSI.

Observations: The bags were on pallets and separated from the other areas of the building.

SWMU 5 **Waste Degreaser Storage Area**

Unit Description: Methyl ethyl ketone (MEK) is used at MCCC for degreasing metal parts. Waste MEK is stored in several 55-gallon drums in the North Butler Hut.

	The butler hut buildings have concrete floors and doomed roofs. The MEK storage area is approximately 200 to 300 square feet. The drums are picked up for off-site disposal every 30 to 40 days.
Date of Start-up:	Waste MEK was first stored in this unit in 1989.
Date of Closure:	This unit is currently active.
Wastes Managed:	Waste MEK is stored in this unit.
Release Controls:	Waste MEK is stored in 55-gallon drums. The drums are stored on a concrete floor inside the butler hut. There were no berms or other spill containment systems observed during the VSI.
History of Release:	No releases were noted in the documents available for this review or during the VSI.
Observations:	Nothing unusual was notice during the VSI. There were several drums containing various amounts of waste MEK. No stains or cracks were observed on the floor in the area. A new storage area for waste MEK is being constructed (Cichon, 1990a).
SWMU 6	**Drum Storage Area**
Unit Description:	Oil and wax are used to protect the plating on parts during packing and subsequent operations. Waste oil is stored in drums along the outside of the east wall of the cyanide treatment facility, across from the South Butler Hut. Drums containing waste permathane and spent wax are also stored in this area.
Date of Start-up:	Drum storage in this area began in 1985.
Date of Closure:	This unit is currently active.
Wastes Managed:	Waste oil, wax and permathane are stored in this area.

Release Controls:	Waste material is stored in drums located directly on the pavement. There are no containment devices.
History of Release:	No releases were noted in the documents available for this review.
Observations:	A few small dark stains on the pavement were noticed in the vicinity. However, it is not possible to determine whether the source of the stains is from the drums stored in this area.

4.0 AREAS OF CONCERN

PRC identified three areas of concern. These are discussed below.

AOC 1 Chemical Warehouses

There are three storage areas for chemical supplies: the Erwin building, the North Butler Hut, and the South Butler Hut.

In addition to sludge from the LANCY and ANDCO treatment units, the Erwin building also contains liquid acids and scrap parts.

The butler hut buildings have concrete floors and domed roofs. There were no berms or other spill containment systems observed on the VSI. New and used MEK is stored in the North Butler Hut. MEK is used at MCCC as a degreaser. Permathane and sodium hypochlorite are also stored in this building.

The South Butler Hut appeared to be two butler huts joined end-to-end. Thus, it was similar in appearance and construction to the North Butler Hut. This building contains sodium cyanide pellets, sodium copper cyanide, sodium hydroxide, ammonia, nickel stripper and hydrofluoric acid. Spilled sodium cyanide pellets were observed on the VSI. In the rear of this building, where the ammonia is stored, the smell of ammonia was very strong.

AOC 2 Chrome Plating Area

A portion of the chrome plating operation was under construction during the VSI. In this area, it appeared that MCCC had broken through the concrete foundation of the building, exposing unprotected soil. A few small clumps of yellow solid material were observed on or near the exposed soil at this location. Presumably, this material is a chromium compound.

AOC 3 Chrome Plating Line Air Scrubber

An air scrubber is used to clean emissions from the chrome plating line. However, the ventilation systems for plating baths and spray booths leading to the scrubber appeared to be obstructed or inoperative. The scrubber itself was not observed during the VSI.

ATTACHMENT A

U.S. EPA PRELIMINARY ASSESSMENT FORM 2070-12

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MI	MID 005378161

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES *(Check all that apply)*

- ☒ A. SOLID
- ☒ B. POWDER, FINES
- ☒ C. SLUDGE
- ☐ D. OTHER_____ *(Specify)*
- ☐ E. SLURRY
- ☒ F. LIQUID
- ☐ G. GAS

02 WASTE QUANTITY AT SITE *(Measures of waste quantities must be independent)*

TON _____

CUBIC YARDS_____

NO. OF DRUMS_____

03 WASTE CHARACTERISTICS *(Check all that apply)*

- ☒ A. TOXIC
- ☐ B. CORROSIVE
- ☐ C. RADIOACTIVE
- ☐ D. PERSISTENT
- ☐ E. SOLUBLE
- ☐ F. INFECTIOUS
- ☐ G. FLAMMABLE
- ☐ H. IGNITABLE
- ☐ I. HIGHLY VOLATILE
- ☐ J. EXPLOSIVE
- ☐ K. REACTIVE
- ☐ L. INCOMPATIBLE
- ☐ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	Present		Quantity is not known.
OLW	OILY WASTE			
SOL	SOLVENTS	Present		Quantity is not known.
PES	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES *(See Appendix for most frequently cited CAS Numbers)*

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
F007	Electrochemical plating bath water		On-site treatment		
F009	Electrochemical plating rinse water		On-site treatment		
F006	Metal hydroxide sludge		Plastic bags		
F005	Methyl ethyl ketone	78-93-3	55-gallon drums		
F002	1,1,1-trichloroethane	71-55-6	55-gallon drums		

V. FEEDSTOCKS *(See Appendix for CAS Numbers)*

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS	Sulfuric Acid	7664-93-9	FDS	Sodium cyanide	143-33-9
FDS	Sodium Hydroxide	1310-73-2	FDS	Copper cyanide	592-01-8
FDS	Chlorine gas	7782-50-5	FDS	Various metals	

VI. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

EPA Region 5 files, MDNR files, visual site inspection.

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE: MI	02 SITE NUMBER: MID 005378161

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE:_____) — ☐ POTENTIAL — ☐ ALLEGED

03 NARRATIVE DESCRIPTION

None.

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE:_____) — ☐ POTENTIAL — ☐ ALLEGED

03 NARRATIVE DESCRIPTION (Include name(s) of species)

None.

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE:_____) — ☐ POTENTIAL — ☐ ALLEGED

03 NARRATIVE DESCRIPTION

None.

01 ☐ M. UNSTABLE CONTAMINANT OF WASTES — 02 ☐ OBSERVED (DATE:_____) — ☐ POTENTIAL — ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED:_____ — 04 NARRATIVE DESCRIPTION

None.

01 ☐ N. DAMAGE TO OFF-SITE PROPERTY — 02 ☐ OBSERVED (DATE:_____) — ☐ POTENTIAL — ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED:_____ — 04 NARRATIVE DESCRIPTION

None.

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPS — ☐ OBSERVED (DATE:_____) — ☒ POTENTIAL — ☐ ALLEGED

03 NARRATIVE DESCRIPTION

Failure of the on-site WWTP could introduce metal hydroxides and other chemicals to the sanitary sewer system.

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE:_____) — ☐ POTENTIAL — ☐ ALLEGED

03 NARRATIVE DESCRIPTION

None.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

None.

III. TOTAL POPULATION POTENTIALLY AFFECTED: 125 - 2000

IV. COMMENTS

Although the overall potential for release to the environment at the Michigan Chrome and Chemical Company is not high, there appears to be considerable potential for occupational exposures. A complete safety and industrial hygiene survey is recommended.

V. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analyses, reports)*

EPA Region 5 files, MDNR files, visual site inspection.

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MI	MID 005378161

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE:_____) — ☒ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0 — 04 NARRATIVE DESCRIPTION

Low potential for ground-water contamination from waste degreaser storage areas.

01 ☐ B. SURFACE WASTER CONTAMINATION — 02 ☐ OBSERVED (DATE:_____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED:_____ — 04 NARRATIVE DESCRIPTION

None.

01 ☐ C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE:_____) — ☒ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 2,000 — 04 NARRATIVE DESCRIPTION

Potential releases of chromium from an air scrubber servicing the chrome plating operation.

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE:_____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED:_____ — 04 NARRATIVE DESCRIPTION

None.

01 ☐ E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE:_____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 125 — 04 NARRATIVE DESCRIPTION

MCC facility employees.

01 ☐ F. CONTAMINATION OF SOIL — 02 ☐ OBSERVED (DATE:_____) — ☒ POTENTIAL — ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: 1 (Acres) — 04 NARRATIVE DESCRIPTION

Releases from waste degreaser and chemical storage areas could contaminate on-site soil.

01 ☐ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE:_____) — ☒ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED:_____ — 04 NARRATIVE DESCRIPTION

None. Drinking water is supplied by the city of Detroit.

01 ☒ H. WORKER EXPOSURE/INJURY — 02 ☒ OBSERVED (DATE: 07/26/90) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 125 — 04 NARRATIVE DESCRIPTION

The overall industrial hygiene and safety of the facility was very poor. Possible exposures include lead vapor, cyanide, other metals and various solvents.

01 ☐ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE:_____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 2,000 — 04 NARRATIVE DESCRIPTION

See Section C above.

ATTACHMENT B

VISUAL SITE INSPECTION SUMMARY AND PHOTOGRAPH LOG

VISUAL SITE INSPECTION SUMMARY

Michigan Chrome and Chemical Company
Detroit, Michigan
MID 005 378 161

Date:	July 26, 1990
Facility Representatives:	Richard Cichon, Plating Division Manager, 313-267-5200 Bob Emmons, Coating Division Manager, 313-267-5200 Alvin Femster, Plating Division Foreman Grace Orth
Inspection Team:	Michael Keefe, PRC Environmental Management, Inc. Jean Michaels, PRC Environmental Management, Inc.
Conditions:	Sunny, warm and humid, temperature between 80°F and 90°F.

Summary of Activities:

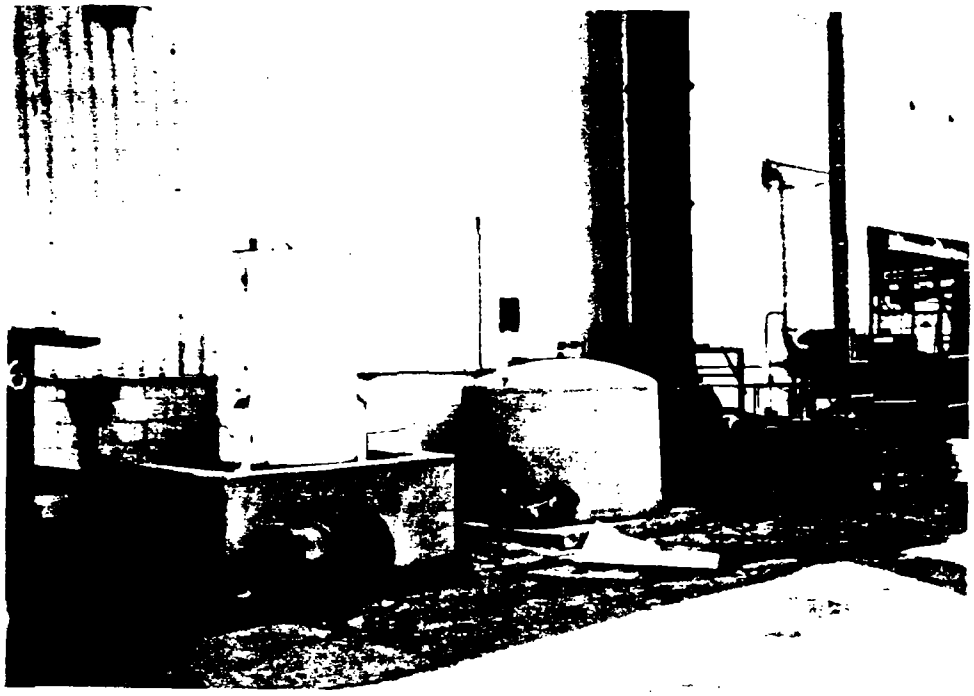
The visual site inspection (VSI) began at 9:00 a.m. EDT with an introductory meeting. Michael Keefe began the meeting with a discussion of the purpose of the VSI and the agenda for the visit. Bob Emmons continued with a brief description of the now-defunct chemical division and current operations in the coating division. Richard Cichon followed with a description of the plating division processes. Most of the information was exchanged on a question-and-answer basis.

At 11:00 a.m., Mr. Cichon introduced the inspection team to Alvin Femster, foreman of the plating division. Mr. Femster gave the inspection team a tour of the plating division, as well as the various SWMUs located just outside the main building. At 1:00 p.m., Mr. Femster and the inspection team drove down Grinnell Avenue to the coating division building. Grace Orth briefly described the operating coating lines and gave a tour of the building. An attempt was made to photograph facility operations; however, a flash camera was not available and the light level in the facility was not sufficient to expose film without a flash.

The inspection team returned to the main office at approximately 2:00 p.m. for a short exit meeting with Mr. Cichon. The VSI was completed at 2:30 p.m.

PHOTOGRAPHIC LOG

Photo No. 1

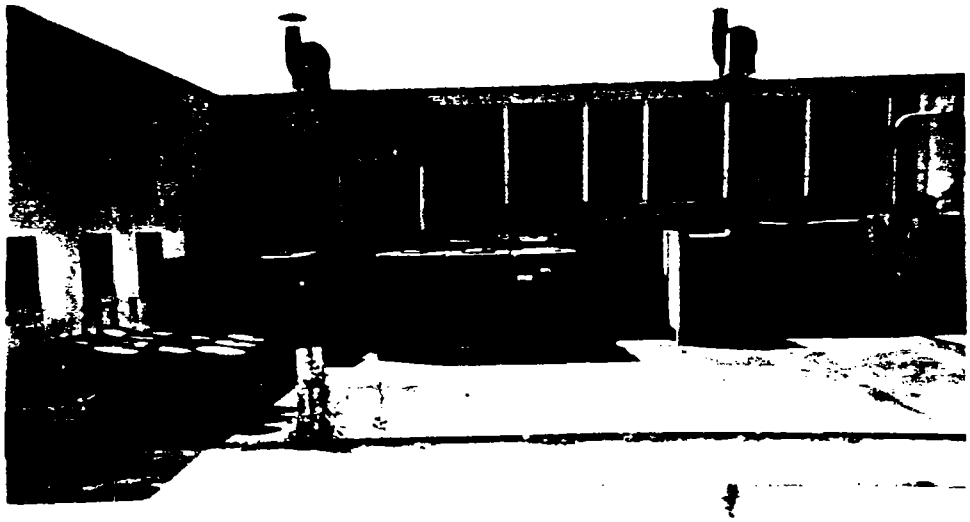


Direction Facing: East Name: Michigan Chrome and Chemical Co.
Date: July 26, 1990 11:45 a.m. EDT SWMU No.: 2
Description: The ANDCO unit is behind this wall. The yellow tank contains sodium hypochlorite. The cyclone for the sludge incinerator is on the far right.

Photo No. 2

Direction Facing: Northwest Name: Michigan Chrome and Chemical Co.
Date: July 26, 1990 12:00 p.m. EDT SWMU No.: 1
Description: Solvent waste storage area.

Photo No. 3

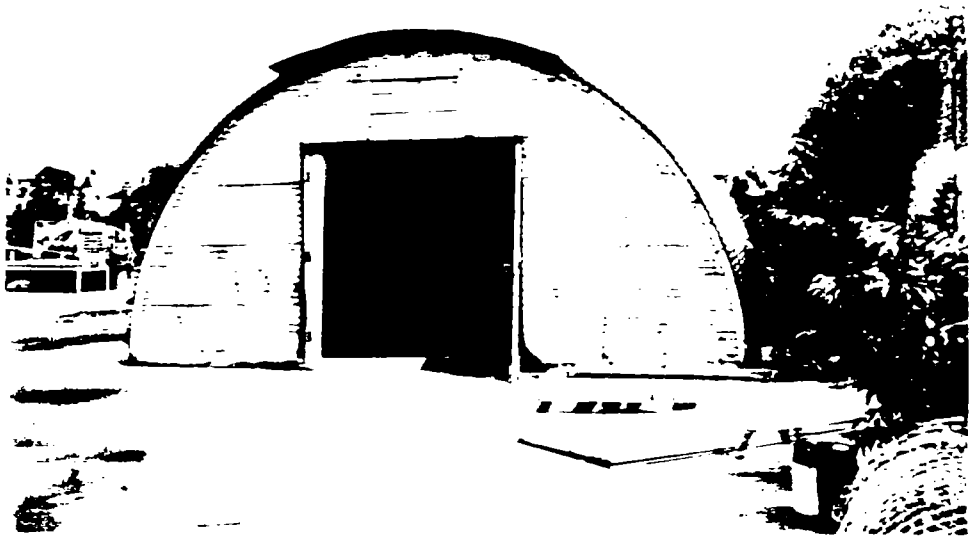


Direction Facing: South Name: Michigan Chrome and Chemical Co.
Date: July 26, 1990 12:01 p.m. EDT SWMU No.: 1
Description: Solvent waste storage area.

Photo No. 4

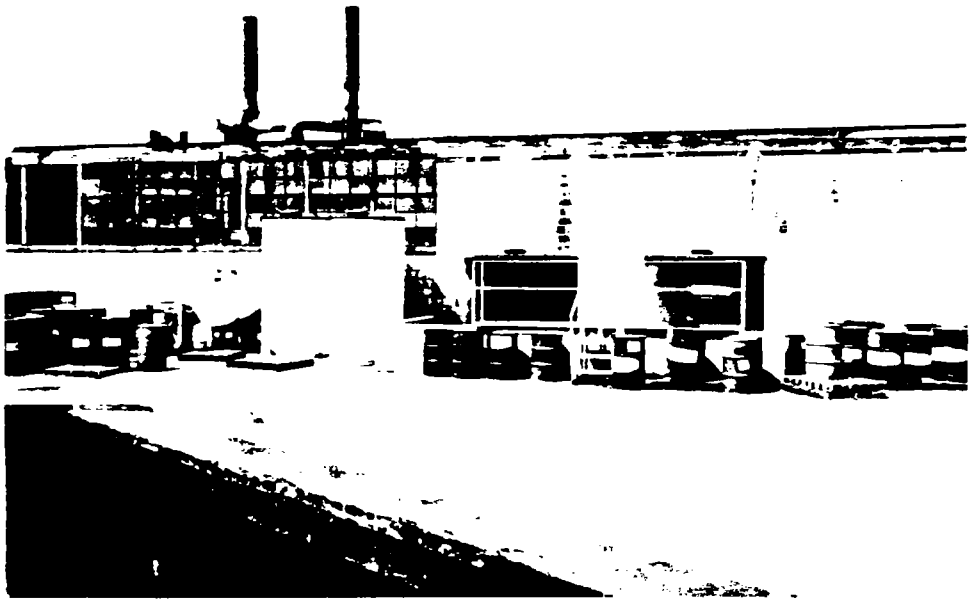
Direction Facing: Southeast Name: Michigan Chrome and Chemical Co.
Date: July 26, 1990 12:15 p.m. EDT SWMU No.: 4
Description: Metal hydroxide sludge storage inside the Erwin building

Photo No. 5



Direction Facing: North Name: Michigan Chrome and Chemical Co.
Date: July 26, 1990 12:30 p.m. EDT SWMU No.: 5
Description: North Butler Hut; waste MEK storage.

Photo No. 6



Direction Facing: West Name: Michigan Chrome and Chemical Co.
Date: July 26, 1990 12:35 p.m. EDT SWMU No.: 6
Description: Drum storage area.

ATTACHMENT C

VISUAL SITE INSPECTION FIELD NOTES

MCCC → RICHARD CICHON VSI

7/26/90

3 DIVISIONS

Michael Keefe
Jean Michaels

1. Plating
2. Coating
3. Chemical - sold in 1/90, now only manufactures coatings (powders, PLASTISOL) for MCCC use, not sold.

I SOLVENT Waste Storage AREA V (BILL EMMONS) → WORLD RESOURCE CONSERVATION in PA

REMOVED BY WRC (2)

* all material is gone -
* soil survey proposal in May 1990 — MCCC needs approval for a non-standard technique from MDNR. They are waiting for them.

MORE TOLUENE & CHEM DIVISION WAS SHUT DOWN..

CURRENT SOLVENT / CHEMICAL STORAGE

1. ERWIN BUILDING (warehouse on erwin road)
   - Chemical storage : acids (liquid)
   - metal hydroxide sludge bags
   - scrap parts, metal

2. North BUTLER HUT

bit we see here - we have 1/2 drums full of MEK

NEW/USED
- MEK (used in vapor degreasers)
- Spent oils (coated parts are dipped in oil to protect the coating)
- Permethane (TCE ?)
- NaOCl (sodium hypochlorite)

NO, STORED OUTSIDE

used MEK (in drums) removed 30-40 days

HUT: concrete floor, domed roof, no berm

→ only Alvin has key + has training

3. "Double Butler Hut" - South
   - NaCN storage (pellets)
   - Na Cu CN storage
   - NaOH, NH_3 → STRONG ODOR
   - Nickel stripper

Hut is similar to other hut, no berm, concrete floor.
- also stores dry HF (?)

PLATING OPERATIONS

6 main lines for plating
- Nickel Cadmium
- Chrome
- Copper Cyanide
- Silver
- Bronze
- Electroless Nickel (chemical plating process, not electrical)

1 "passivating" etching line
- uses Nitric / Hydrofluoric Acid mix

MCC can also do gold, tin, lead-tin, alloy ....

10 for aerospace parts, also automotive

- Conversion coating operation (alum. lux, chromate, plastisol

Plating Division Observations:

* construction work on one of the chrome lines. It appears that MCCC has broken through the concrete foundation of the building and is down to bare earth. Yellowish solids in this area. Future of this area?

* Generally poor industrial hygiene/safety → no PPE for workers, plating tanks not ventilated, or ventilation system corroded/inoperative.

* Chrome line ventilation is said to go to a scrubber, said to be on the roof. Whether this system operates is questionable? Water from scrubber? → to ANDCO

* LEAD ANODE SHOP - signs for respirators, Though none worn, no ventilation!

* Overall poor conditions

* Spray booths in chemical conversion coating - almost inoperative little water, quiet

* Incinerator - exhaust control
- regulations

PVC coatings - shutdown in 10/89 ; sold off formulas.

GRACE _____ showed us around.

COATING DIVISION

- separate building
- POWDER COATING LINES

I

ALVIN comes over to neutralize spent rinse water, Then down the sewer

1. 5 STAGE CLEANER : ~~Iron phosphate~~ ~~Alkali~~ ~~Water rinse~~

ALKALI
WATER
IRON PHOSPHATE
WATER
CHROMIC

WASTE

? DISPOSAL

2. Electrostatic spray booths → 1-10 μm particles

check on reg status of this.

- cyclones → overspray is recycled once, disposed of in dumpster.

3. OVENS

4 SPRAY COOL

? chemical composition of powders ??

II, III Polyester, Epoxy powders,

MCCC VSI 7/26/90

M. Keefe
J. Michaels

3 DIVISIONS

→ POWDER coating manufactured by MCCC, not sold.

1) Plating
2) [illegible]
3) [illegible] sold 1/90

MCCC : RICARD CICHON

ALVIN _____ PLATING FOREMAN

GRACE _____ COATING

Solvent - Waste Storage (Bill EMMONS)

* material gone
* soil survey proposal in May 1990 → MCCC needs approval for change from MDNR

Plating solvents stored in back but where cyanide sludge storage area is

WRC - waste recyclers
World Resource Conservation = PA.

Gold, Chrome, Tin, Nickel, Lead-Tin, Bronze Lead Silver, Alloy

Boeing, Boeing, Gumman → aerospace + government

SOLVENTS

- MEK - vapor degreasers
- Spent oils liquid + presence
- Permathane (TCA)

no more toluene now that chemical division is down.

Concrete floor, domed cut, no berm.

DESCRIPTION

LANCY SYSTEM - OPA-, PA (now EER)

Cyanide Treatment - 2000 gal/week by batch

Treat 2 10th cyl. of Cl_2

Copper-Tin Cyanide sdns - treated with Cl_2 $CN \rightarrow CO_2 N_2$

Sludge →

Liquid → neutralize, floc, decant gas

No hypochlorite treatment

DESCRIPTION

ANDCO System Sulfaw NY

- continuous treatment of process rinse water

1) CN pit - with pH 11.5

rinse for CN process lines

↳ back to main pit to Acid/Alkali pit

↓ 30400 volts

pumped Through electrochemical treatment

cells → reduced to metal hydroxides

process 180,000 gal/day → 10 cy/week

18,000 gallon unit

Polymers - flotation clarifier - floats scrap sludge - pressed

cake goes to a burner system 950-1000° - damp

powder into drums ← → into bags → to WRC (reclaiming)

Fe, Ni, Co

from iron plates in cells

cells replaced every 5 weeks.

in warehouse

- LANCY
- ANDCO
- PLANT MAP
  - PLATING
  - COATING
  - → TANK VOLUMES, waste stream volumes

Warehouse
- chemical storage
- scrap
- ~~—~~ metal hydroxide bags] sulfuric waste

FUTURISTIC ~~Frame~~ Converts ~~coats~~ Aluminum
Aluminum to chromate + inorganic coating

→ engines, other aluminum parts

- Tanks of muriatic acid empty
- drums of ost waste

No UST

18,000 gal pits

53,000 gal storage
drain ~~to the detention pond~~

7 compartments

acid/alkali
floor spills
cyanide
sep compartment

- Chemical division - made plastisol, powders, resins

Coating Division

- 5 stage cleaner - ~~iron~~-phosphate
  Alkali
  Wastewater
  ] waste goes back to pit-up
- Electrostatic spray booths (1-3 gun per booth)
- dried on - coated
- Polyester
- Epoxy powders

overspray is recycled

DLD → PVC coatings → toluene - PSC] shutdown 10/89
sold to Chemionics - GH

ARC

Jetro shop plating

I Plating

II Coating - application

III Partial Chem. DIV. sold Jan 1990
→ makes coatings (powder), platisol (dipping)

SD, *1) Solvent Waste Storage (Bill Evans) - almost closed - all mat'l removed,
soil sampling (Larry AuBuchon)
Waste solvents (from plating) now stored in "back hut"
Worlds Resource Consrv (recyclers) - (PA) -

Gold, Cr, Tin, Sulf. Ni, Bronze Alloy, Ag, Electrolss Ni., Cd., Al
Boeing, Grumman

MEK, Spent oils, 1,1,1 TCA ("permathane") - drums
concrete floor - "hut" domed bldg

1978/79 Lancy System
*2. 1:4 Cynadide Batch treatment w/ Cl_2 gas
(usually Cu/Sn) - metal sludge - to WRC
liquid to POTW (1/1-2wks)
CN → separate → CO+N
neutralize w/ acid, settle w/ polymers

2000gpw

pamphlet on Lancy System

85 Andco System : Continuous treatment of process

CN pit: treated w/ Na hypochlorite (pH adj.)

→ acid/alkali pit · pH adj. → elements are destroyed → go through high voltage cells - precipitation of metal hydroxide sl. → polymers - clarifier - press →

iron plates - replace every 5 wks

180,000 gpd

10CY/wk

liq. to DWBWS

burner system (950-1000°) - powder to drums to polypropelene bags.

Bags to WRC - Fe, Ni, Sn

Bags stored in warehouse

Map #5 gone

Warehouse - Chemicals, scrap parts powder coatings

no underground tanks - pulled out in Dec. 1989.

Andco - manual feed from bulk to process tank

Labs: - mostly water - usually send back to CN treatment

map -- coating div.

2 prod. lines

5 stage cleaner - phosphate, alkali water rinse
waste to treatment at plating

electrostatic spray coating — polyester or epoxy powders
metal baked on

shipped out — overspray collected & recycled.

Chem div. → sold 1990 (shut down 10/89)
Chemionics (OH)

PVC sludge
toluene (to clean equip.)